

# PATENT SPECIFICATION

691226



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No. 7426/51.

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Complete Specification Published: May 6, 1953.

Index at acceptance:—Class 102(i), A(1a1a: 3f4b1), A4(h: q: s5b1).

## COMPLETE SPECIFICATION

### Improvements in or relating to Cask Pumps

We, ALFRED REYNOLDS SCHLOSSHAUER, a German citizen, and ELEANOR SCHLOSSHAUER-REYNOLDS, a citizen of the United States of America, both of  
5 Lennastrasse 14, Heidelberg, Germany, trading in co-partnership as HELIOS-APPARATE, WETZEL and SCHLOSSHAUER, do hereby declare the invention, for which we pray that a patent may be  
10 granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to cask pumps  
15 for grease, oil or the like and more particularly pumps which can be inserted into supply containers and then used to convey the contents of the containers direct to consumption points. The pumps  
20 are particularly suitable for use in garages, motor vehicle repair workshops, tank stations or the like, and thereby dispense with the otherwise necessary transfer of grease or oil from the supply  
25 casks into special storage containers to the pump system. Since in this connection the media to be conveyed are usually lubricating greases and oils of high viscosity, which moreover have to be supplied  
30 under pressure to the points where they are used, the delivery of the media into the suction range of the pumps presents considerable difficulties, these difficulties are minimised or overcome in the  
35 container pumps by the provision of special stirring and delivery mechanisms.

The invention relates to a pump which is adapted to be introduced, without  
40 special precautions, into a supply container and which fully complies with the conditions to be fulfilled, that is to say, it conveys the entire content of the supply container to consumption points  
45 during the course of normal working

without the formation of empty spaces and without it being necessary to force the contents by other means when the container has been partially emptied.

According to the invention there is  
50 provided a cask pump, especially for consistent fats and oils, consisting of a piston-pump assembly provided on a cover plate for mounting on the edge of  
55 a cask, the said assembly lying close to the bottom of the cask when the cover plate is mounted on the edge of the latter, whilst the piston-pump body is fitted in the end of a tubular sleeve in  
60 the neighbourhood of the bottom, characterised in that each cylinder of the piston-pump is provided with an intake duct which will be uncovered by the  
65 piston in the end intake position, and is provided close to the lower end with a delivery duct, the delivery ducts being connected to the end faces of a control  
70 cylinder having a free piston, from the centre of which cylinder a final delivery duct is branched.

The pump body is inserted into the tubular sleeve in such manner that suction spaces are left at the lateral surfaces accommodating the suction ducts, and the drive shaft passes through the  
75 pump body in order that its lower end may drive the rotatable tubular member with the stirrer blades through a reduction gearing. The reduction gearing consists of a pinion carried by the end of  
80 the drive shaft, said pinion being in mesh with a gear wheel mounted on the underside of the pump body. The gear wheel is fitted on its upper face with  
85 radially directed cams with which are associated recesses on the end face of the tubular member. These recesses are conveniently arranged on a hub ring mounted on the tubular member, said  
90 ring carrying the stirrer blades, and is

guided with an internal collar on supporting projections of the pump body. The stirrer blades are made as intake blades which convey the medium picked up thereby towards the hub ring and thus into the intake zone of the pump. In order to ensure that the contents of the cask slip down when greases of high viscosity are involved, flexible radial arms are arranged at the upper end of the tubular member in the plane of the stirrer blades, said arms being connected at their ends by tensioning wires to the ends of the blades disposed therebeneath.

The novel construction results in a compact construction in which all sensitive parts are protected without the suction capacity of the pump being impaired. Due to the revolving tubular member, the contents of the cask are given a rotational movement at the centre, which assists the slipping down of the viscous greases. The tension wires cut through the contents at the wall of the cask, so that the contents form a more or less detached column which consequently slips down according to the amount that is removed at the bottom end of the cask by the pump. The forwardly curved blades of the stirring mechanism thus conveys the downwardly slipping material into the suction range of the pump. Thus it is not possible for any cavities to be formed on the bottom of the cask and the pump removes practically the entire contents without any outside aid.

The novel cask pump is more fully described with reference to the constructional example shown in the drawing, wherein:—

Figure 1 is an axial section through the pump mounted on a cask.

Figure 2 is a section through the pump aggregate to a larger scale.

Figure 3 is a cross-section on the line III—III of Figure 2, and

Figure 4 is a part section on the line IV—IV of Figure 3.

A cover plate 1, the dimensions of which are such as to enable it to be adapted to the diameter of a cask drum 2 for lubricating grease or lubricating oil, is provided with clamp members for fixing it on the rim of the drum, said cover plate 1 carries in a central opening a bearing block 4 formed with a bore 5 and fitted with a downwardly directed tube 6. The length of the tube 6 depends on the height of the barrel. The cover plate 1 and the tube 6 can be made in different sizes according to the dimensions of the drum form which it is intended.

At the bottom end of the tube 6 is a pump body 7 which is inserted into the said tube, the body consisting of a cylinder flattened at opposite sides and provided on the remaining sides with a collar 9 which bears against the end face of the tube 6. The flats 10 of the pump body thus form cavities 11 in conjunction with the tube 6, said cavities being freely accessible, at least from the underside.

The pump body 7 is provided with three bores 12, 13, 14, of which the two that each adjoin one of the flats 10 are closed on the underside by plugs 15. The bore 12 acts as a guideway for a shaft 16 which extends through the tube 6 and is coupled in the example with an electric motor 17 secured to the bearing block 4.

Guided in each of the bores 13, 14 of the pump body 7 is a piston 18 or 19, the piston rods 20, 21 of which are connected by heads 22, 23 to a cam disc 24 of the shaft 16. The cam disc 24 is so designed that the two pistons 18, 19 are caused to move in opposite directions when it is rotated. The two cylinder bores 13, 14 are connected to the cavities 11 by outwardly flared wall slots 25, 26 which are always uncovered when the associated piston 18 or 19 is in the top position. Close above the closing plugs 15, each cylinder bore 13, 14 is connected by a duct 27, 28 with a bore 29 of the pump body 7. The bore 29 forms a cylinder space closed by a screw plug 30, and the ducts 27, 28 open into the said space at the two end faces. Branching from the centre of the free bore 29 is a passage 31 which is connected to a delivery tube 32. The latter extends through the tube 6 to the bearing block 4, where it can be connected to a hose or the like.

Arranged in the bore 29 is a piston 33, the length of which is so dimensioned that it uncovers the delivery duct 31 in each end position. Since the duct 28, due to the plug 30, cannot open directly to the end wall formed by the latter, the plug 30 is provided with a nose 34 which limits the path of the piston 33 and keeps the mouth of the duct open.

Due to the rotational movement of the cam disc 24, the pistons 18, 19 are made to move in opposite directions. The piston in the lifted position at any time thus uncovers the associated intake slot, so that under the reduced pressure of the corresponding cylinder, lubricant enters the cylinder from the drum through the suction space. With the downward movement of the piston, the suction slot of the cylinder is closed and the lubricant is

forced into the control cylinder 29, whereby the control piston 33 is displaced to the opposite side and frees the passage of the lubricant into the delivery pipe 31, 32. The passage leading to the other pump cylinder is thereby shut off from the delivery pipe 31, 32, so that a reduced pressure is obtained in this pump cylinder by the upwardly travelling piston and, under the action of the said reduced pressure, lubricant is drawn into the cylinder for the next compression stroke after the intake port has been uncovered.

15 In order to ensure that the contents of the drum move into the suction range of the pump, a tubular member 35 is rotatable about the tube 6, such member being guided at the upper end on a shoulder 36 of the bearing block 4 and carrying at the bottom end a hub ring 37 which is supported by an internal collar 38 on the flange 9 of the pump body 7.

25 The hub ring 37 is provided at the bottom end face with recesses 39 in which engage radially directed cams 40 of a gear wheel 41. The gear 41 is rotatably mounted at the underside of the pump body 7 and meshes with a pinion 42 of the drive shaft 16. The annulus 37 carries stirrer blades 43 which are formed as intake blades and convey the material picked up thereby towards the pump body 7.

35 Near the upper end, the tubular member 35 carries flexible radial arms 44 which are disposed in the plane of the stirrer blades 43 and at the ends are connected with the latter by tension wires 45, which, as they rotate, detach the column of lubricant contained in the drum from the wall of the latter and thus assist the slipping down even when highly viscous greases are involved.

45 What we claim is:—

1. Cask pump, especially for consistent fats and oils, consisting of a piston-pump assembly provided on a cover plate for mounting on the edge of a cask, the said assembly lying close to the bottom of the cask when the cover plate is mounted on the edge of the latter, whilst the piston-pump body is fitted in the end of a tubular sleeve in the neighbourhood of the bottom, characterised in that each cylinder of the piston-pump is provided with an intake duct which will be uncovered by the piston in the end intake

position, and is provided close to the lower end with a delivery duct, the delivery ducts being connected to the end faces of a control cylinder having a free piston, from the centre of which cylinder a final delivery duct is branched.

2. Cask pump according to claim 1, wherein the pump body is applied, by a collar on its surrounding surface, against the end face of the tubular sleeve in such manner as to leave intake cavities to which the intake ducts of the pump cylinders are connected, and wherein a pump driving shaft passes through the pump body and is coupled at its lower end through a toothed-wheel gearing with a toothed annulus on a rotatable second tubular sleeve which surrounds the first tubular sleeve supporting the pump body.

3. Cask pump according to claim 2, wherein the driving shaft is in engagement through a pinion with a toothed wheel mounted on the lower side of the pump housing, which toothed wheel is radially directed cams to which there is provided on its upper face with a ring of correspond recesses in the end face of the second tubular member.

4. Cask pump according to claim 2 or 3, wherein the second tubular member carries at the bottom end a ring formed with the driving recesses, said ring being guided by means of an internal collar on supporting projections of the pump body and carrying stirrer vanes made in the form of intake blades.

5. Cask pump according to claim 4, characterised in that the second tubular member is guided at the upper end on a supporting member of the cover plate and is provided at this end with flexible arms disposed in the plane of the stirrer blades, said arms being connected at their ends by tension wires to the stirrer blades.

6. A cask pump substantially as here- inbefore described with reference to and illustrated in the accompanying drawing.

Dated the 30th day of March, 1951.

HASELTINE, LAKE & CO.,

28, Southampton Buildings,  
Chancery Lane, London, W.C.2,  
England, and

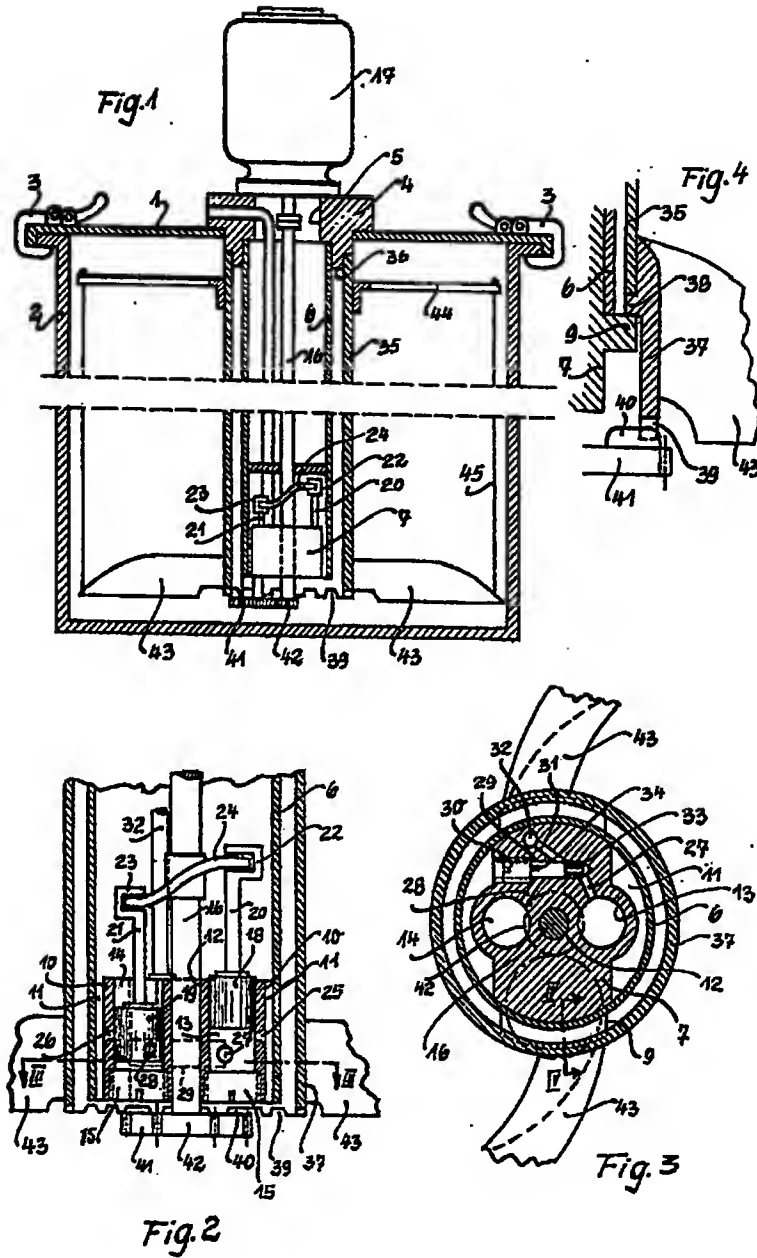
19-25, West 44th Street, New York,  
U.S.A.,

Agents for the Applicants.

Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press.—1953.

Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

This drawing is a reproduction of  
the Original on a reduced scale.



# PATENT SPECIFICATION

229,318

Convention Date (Germany): Feb. 12, 1924.

Application Date (in United Kingdom): Feb. 12, 1925. No. 3973/25.

Complete Accepted: Dec. 24, 1925.



## COMPLETE SPECIFICATION.

### An Improved Plunger Lubricant Pump.

I, OTTO MICHALK, of Freital-Deuben, near Dresden, Germany, a citizen of the German Republic, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

In plunger lubricating pumps with a controlling cone the latter is pressed upon its seat by a spring acting upon it, which makes it fluidtight against the pressures that occur. This kind of packing suffices so long as the pressures are not too high, and do not exceed some 40 to 50 atmospheres. In the case of long pipe lines, and especially such as are exposed to cold, pressures may occur that amount to several hundred atmospheres. Of course it is possible to provide for even these pressures by a correspondingly strong spring. Then however a very heavy load would rest constantly on the controlling cone and would wear it away extremely fast. The driving also would go very heavily. In addition to this it would be inadvisable on account of the very high pressures which, it must be admitted, only occur occasionally, to employ such a heavy load acting continuously, apart from the fact that the construction of the pump, owing to the large spring requisite for high pressures, likewise proves very large and acquires a cumbersome appearance, which also occasions an increased weight of the pump, involving greater expenditure of metal.

Now the controlling cone can be pressed upon its seat with a pressure that corresponds to the pressure in the lubricant pipe, if the latter is led through the space behind the controlling cone. This construction however does not permit of the guiding of the pressure piston in the controlling cone itself where there is a plurality of lubricant pipes, for in this case the volume of the space behind the controlling cone changes with the strokes of the pressure

piston, and the high pressure of the oil forced into that space would counteract the free motion of the pressure piston under the action of the comparatively weak spring that effects the lifting stroke. In order also to be able to bring the oil pressure acting for the time being upon the controlling piston into operation in the case of lubricant pumps of this kind, according to the present invention the lubricant pipes open by a branch into a cylinder in which the controlling cone is guided by a piston, through the medium of which the oil pressure is transmitted to the controlling cone. In the case of a plurality of lubricant pipes the highest pressure occurring in any one of them would always have to become operative on the piston. In order that it may not be propagated to the other pipes, and mutually equalise with the pressure therein, a non-return valve is inserted in each branch pipe. Of the pressures arising in all the pipes the highest will preponderate and will close the check valves of the other pipes, but at the same time will also come into action in full measure on the piston of the controlling cone. Non-return valves may be omitted if the pressure in each pipe is brought into operation on the piston connected with the controlling cone by means of auxiliary or intermediate pistons.

A special advantage of the invention is the possibility of converting existing lubricant pumps of this kind in the simplest manner into high-pressure pumps utilising all their essential parts.

In the accompanying drawings the invention is illustrated in Figure 1 in one constructional example in partial longitudinal sectional elevation.

Figures 2 and 3 show two other constructional forms, in partial longitudinal sectional plan on the line 2—3 in Figure 1.

In a casing *d* is rotatably supported a controlling cone *a*, which receives its intermittent drive by way of its shaft *b*,

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for example in the usual way by means of a ratchet lever *l* working upon a ratchet wheel *b'* on the shaft *b*. In this case the pump piston *k*, guided in the controlling cone *a*, receives its suction stroke and its pressure stroke alternately, through its cam plate *k'* working on the stationary cam plate *m*. During the suction stroke the cavity in the controlling cone *a* is in communication through its transverse bore *a'* with an oil-supply pipe *n*, and during the pressure stroke it is similarly in communication with a lubricant pipe *f*. If there are a number of lubricant pipes *f*, then the piston *k* executes during one revolution of the controlling cone *a*, a number of suction and pressure strokes, this result being attainable by suitably shaping the cam plates *m* and *k'*.

According to Figure 1, on the spindle *b* of the controlling cone *a*, a nut *c* is secured in front as a piston, which is guided in the cylinder *d*. To the cylinder space *e* located in front of it is connected the lubricant pipe *f*, by a branch *f'*. When there is only one lubricant pipe the connecting of a non-return valve is not necessary. If however there are several lubricant pipes, a non-return valve *g* is fitted into each branch *f'*. The maximum pressure arising in one of the lubricant pipes preponderates and shuts off all the others by means of their check valves, but at the same time presses the controlling cone *a* upon its seat with correspondingly great force in consequence of its action upon the piston *c* connected with it.

Non-return valves may be omitted if the pressure arising in the lubricant pipes is caused to act upon the piston nut *c* by means of intermediate pistons *h* according to Figure 2. In this case the intermediate pistons *h* may be guided (by the aid, if desired, of a valve rod with guiding ribs or vanes, as shown in Fig. 2) in the casing of the lubricant pump quite optionally either parallel or obliquely or even perpendicularly to the axis of the piston. In the example of Figure 2 they act perpendicularly to the pump axis. Accordingly the surfaces operative upon one another either of the auxiliary pistons *h* or of the piston nut *c* or even both are correspondingly bevelled, in order that a wedging action may occur and the direction of pressure of the auxiliary pistons *h* may be deflected in a favourable manner into the axial direction of the piston nut *c*. Of course the intermediate pistons may also act in an axial

direction on the piston nut *c*, as shown in Figure 3. In this case bevelling is not required. By corresponding selection of the surfaces on the auxiliary pistons and on the piston nut *c*, a more or less large applying pressure for the controlling cone *a* may be obtained, without having to alter the diameters of the auxiliary pistons or choose them specially large. According to the bevelling such a fine balancing between pressure and counter-pressure can be obtained that the friction pressure of the controlling cone even in the case of the highest working pressures occurring is not greater than in the case of the lower ones, and conversely. This has a very great influence on the life of the pump. The auxiliary pistons may be constructed as controlling pistons, which upon attaining a definite maximum pressure open a duct and thereby prevent the desired applying pressure from being exceeded.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A plunger lubricant pump having a controlling cone which is pressed on to its seat by the pressure in the lubricant pipe, characterised by the feature that the lubricant pipes open by a branch into a cylinder in which the controlling cone is guided by a piston, through the medium of which the pressure is transmitted to the controlling cone.

2. A plunger lubricant pump as claimed in Claim 1, characterised by the feature that a non-return valve is interposed in each lubricant pipe branch, before it opens into the cylinder.

3. A plunger lubricant pump as claimed in Claims 1 or 2, characterised by the feature that the pressure in each lubricant pipe acts on the controlling cone by means of an auxiliary piston.

4. A plunger lubricant pump as claimed in Claim 3, characterised by the feature that the auxiliary pistons are guided at an angle to the axis of the controlling cone and the inclination of the pressure surfaces between the auxiliary pistons and main piston is so selected that the resultant valve-applying pressure is only a little greater than the counter-pressure on the controlling cone.

5. A plunger lubricant pump, substantially as described.

Dated this 12th day of February, 1925.

MARKS & CLERK.

Fig. 1.

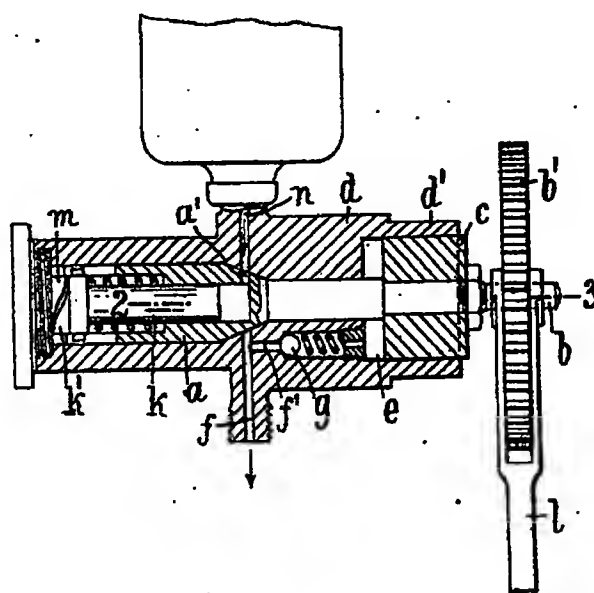


Fig. 2.

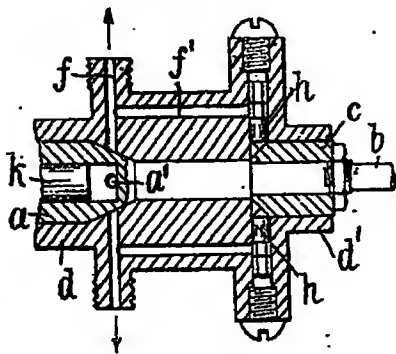
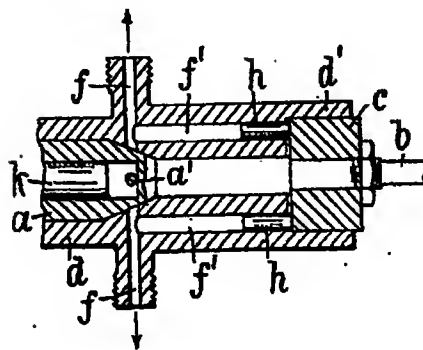


Fig. 3.



[This Drawing is a reproduction of the Original on a reduced scale.]



**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL SEARCH REPORT**  
(PCT Article 18 and Rules 43 and 44)

RECEIVED

Applicant's or agent's file reference <b>47938-92</b>	<b>FOR FURTHER ACTION</b>	see Form PCT/ISA/220 as well as, where applicable, item 5 below
International application No. <b>PCT/CA2010/000259</b>	International filing date ( <i>day/month/year</i> ) 22 February 2010 (22-02-2010)	(Earliest) Priority date ( <i>day/month/year</i> ) 22 February 2009 (22-02-2009)
Applicant <b>STEPHANIA HOLDINGS INC. ET AL</b>		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed

☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I

2. ☐ **Certain claims were found unsearchable** (see Box No. II)

3. ☐ **Unity of invention is lacking** (see Box No. III)

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant

☐ the text has been established by this Authority to read as follows :

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant

☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant

☐ as selected by this Authority, because the applicant failed to suggest a figure

☐ as selected by this Authority, because this figure better characterizes the invention

b. ☐ none of the figures is to be published with the abstract



## A. CLASSIFICATION OF SUBJECT MATTER

IPC: *F16N 19/00 (2006.01)* , *B05C 17/01 (2006.01)* , *F16N 11/08 (2006.01)* , *F16N 13/10 (2006.01)* ,  
*F16N 7/38 (2006.01)*

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: *F16N 19/00 (2006.01)* , *B05C 17/01 (2006.01)* , *F16N 11/08 (2006.01)* , *F16N 13/10 (2006.01)* ,  
*F16N 7/38 (2006.01)*

USPC: 184/ , 222/

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Canadian Patent Database

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Epoque (Epodoc), Delphion, TotalPatent; keywords: lubrica\*, fluid, chamber, piston, thrust

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,675,992 B2 (SCHUMANN, A) 13 January 2004 (13-01-2004) *see entire document*	1-4 and 9-12
A	US 6,802,394 B2 (PATTERSON, D. ET AL.) 12 October 2004 (12-10-2004) *see entire document*	1-12
A	US 7,228,941 B2 (WEIGLAND, M. ET AL.) 12 June 2007 (12-06-2007) *see entire document*	1-12
A	US 5,971,229 A (MAY, A. ET AL.) 26 October 1999 (26-10-1999) *see entire document*	1-12
A	US 5,271,528 A (CHIEN, H) 21 December 1993 (21-12-1993) *see entire document*	1-12

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search

30 April 2010 (30-04-2010)

Date of mailing of the international search report

6 May 2010 (06-05-2010)

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Gatineau, Quebec K1A 0C9  
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Authorized officer

Robert Gruber (819) 953-1889

INTERNATIONAL SEARCH REPORT  
Information on patent family members

International application No.  
PCT/CA2010/000259

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
US6675992	13-01-2004	US2003037995(A1)	27-02-2003
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		DE29715808 (U1)	06-11-1997
		EP0845631 (A1)	03-06-1998
		ES2118695 (T1)	01-10-1998
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US5271528	21-12-1993	CA2080880 (A1)	20-04-1994
		FR2697073 (A3)	22-04-1994
		GB2271391 (A)	13-04-1994
		HK1008074 (A1)	30-04-1999

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
**FETHERSTONHAUGH & CO.**  
Box 11560  
Vancouver Centre  
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(PCT Rule 43bis.1)  
CLASSIFIED BY: 2010-05-06  
VANCOUVER, B.C.

Date of mailing 6 May 2010 (06-05-2010)  
(day/month/year)

Applicant's or agent's file reference  
47938-92

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.

**PCT/CA2010/000259**

International filing date (day/month/year)

22 February 2010 (22-02-2010)

Priority date (day/month/year)

22 February 2009 (22-02-2009)

International Patent Classification (IPC) or both national classification and IPC

IPC: *F16N 19/00* (2006.01), *B05C 17/01* (2006.01), *F16N 11/08* (2006.01), *F16N 13/10* (2006.01),  
*F16N 7/38* (2006.01)

Applicant

**STEPHANIA HOLDINGS INC. ET AL**

1. This opinion contains indications relating to the following items :

- |   |              |  |
|---|--------------|--|
| <input checked="" type="checkbox"/> [X] | Box No. I    | Basis of the opinion   |
| <input type="checkbox"/> [ ]            | Box No. II   | Priority   |
| <input type="checkbox"/> [ ]            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability   |
| <input type="checkbox"/> [ ]            | Box No. IV   | Lack of unity of invention   |
| <input checked="" type="checkbox"/> [X] | Box No. V    | Reasoned statement under Rule 43bis.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> [ ]            | Box No. VI   | Certain documents cited  |
| <input type="checkbox"/> [ ]            | Box No. VII  | Certain defects in the international application   |
| <input type="checkbox"/> [ ]            | Box No. VIII | Certain observations on the international application  |

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/CA  
Canadian Intellectual Property Office  
Place du Portage I, C114 - 1st Floor, Box PCT  
50 Victoria Street  
Gatineau, Quebec K1A 0C9  
Facsimile No.: 001-819-953-2476

Date of completion of this opinion

30 April 2010 (30-04-2010)

Authorized officer

Robert Gruber (819) 953-1889

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/CA2010/000259

**Box No. I                      Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of:  
  
    ☒ the international application in the language in which it was filed  
  
    ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
  - a. (means)  
  
        ☐ on paper  
  
        ☐ in electronic form
  - b. (time)  
  
        ☐ the international application as filed.  
  
        ☐ together with the international application in electronic form  
  
        ☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments :

**Box No. V**      **Reasoned statement under Rule 43bis.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims <u>4-8, 12</u>	YES
	Claims <u>1-3 and 9-11</u>	NO
Inventive step (IS)	Claims <u>5-8</u>	YES
	Claims <u>1-4 and 9-12</u>	NO
Industrial applicability (IA)	Claims <u>1-12</u>	YES
	Claims <u>NONE</u>	NO

**2. Citations and explanations :**

The following document is referenced:

D1: US 6,675,992 B2 (SCHUMANN, A.) 13 January 2004 (13-01-2004)

D1 discloses a lubricant holder with a housing (1) defining a cavity for dispensing the lubricant from an opening (2). A piston (11) is in slidable engagement with the housing and has opposed first and second surfaces and further comprises a threaded opening (10) extending between the surfaces. A drive shaft (13) is threadingly engaged with threaded opening (10) and under the power of a motor (19) and battery (20) advances the piston (11) to dispense a desired lubricant amount. Bearings (16 and 17) impose thrust loads from stops (14 and 18) on the drive shaft to a bearing seat (6) formed on the housing.

**NOVELTY (N)**

Claims 4-8 and 12 are novel because the prior art does not show in one document the subject matter claimed.  
Claims 1-3 and 9-11 are not novel under PCT Article 33(2) as being anticipated by D1.

**INVENTIVE STEP (IS)**

Claims 1-3 and 9-11 are not novel under PCT Article 33(2) as being anticipated by D1 and therefore also lack an inventive step under PCT Article 33(3).  
Claims 4 and 12 do not involve an inventive step in view of D1. A complementarily shaped piston (claim 4) and the use of control circuit (claim 12) involves only routine skill of an ordinary workman and therefore the subject matter claimed is not inventive under PCT Article 33(3).

**INDUSTRIAL APPLICABILITY (IA)**

Claims 1-12 meet the criteria for Industrial Applicability set out in PCT Article 33(4) because the claimed invention can be made or deemed useful in industry.